

Claim Amendments:RECEIVED
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This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An ESD safe ceramic component formed of a sintered composition comprising:
a base material of a zirconia toughened alumina, comprising a primary component of Al₂O₃ and a secondary component comprising ZrO₂, wherein the ZrO₂ comprises tetragonal ZrO₂, wherein the primary component of the base material is present in an amount greater than the secondary component; and
a resistivity modifier to reduce an electrical resistivity of the base material, the resistivity modifier comprising a transition metal oxide in an amount within a range of about 5 to about 40 volume% with respect to the base material.
2. (Canceled)
3. (Currently Amended) The ESD safe ceramic component of claim [[2]] 1, wherein the resistivity modifier comprises a conductive particulate.
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Currently Amended) The ESD safe ceramic component of claim [[5]] 1, wherein the transition metal oxide is selected from the group consisting of Fe₂O₃, TiO₂, and MnO₂.
8. (Original) The ESD safe ceramic component of claim 7, wherein the transition metal oxide is Fe₂O₃.

9. (Canceled)

10. (Currently Amended) The ESD safe ceramic component of claim [[9]] 1, wherein the base material comprises Al₂O₃ and ZrO₂ in a ratio not less than 55:45 based on volume percent.

11. (Original) The ESD safe ceramic component of claim 10, wherein said ratio is not less than 60:40.

12. (Original) The ESD safe ceramic component of claim 1, wherein the primary component forms a primary phase of the base material, and the secondary component forms a secondary phase that is dispersed within the primary phase.

13. (Original) The ESD safe ceramic component of claim 12, wherein the secondary component comprises mainly tetragonal ZrO₂.

14. (Original) The ESD safe ceramic component of claim 12, wherein the secondary component comprises at least 75 vol% tetragonal ZrO₂.

15. (Original) The ESD safe ceramic component of claim 14, wherein the secondary component comprises at least 85 vol% tetragonal ZrO₂.

16. (Original) The ESD safe ceramic component of claim 14, wherein the secondary component further includes at least one of cubic and monoclinic ZrO₂.

17. (Original) The ESD safe ceramic component of claim 1, wherein the ZrO₂ includes a stabilizer.

18. (Original) The ESD safe ceramic component of claim 17, wherein the stabilizer comprises at least one material from the group consisting of yttria, ceria, scandia.

19. (Original) The ESD safe ceramic component of claim 17, wherein the ZrO₂ is pre-alloyed with the stabilizer prior to sintering.

20. (Original) The ESD safe ceramic component of claim 1, wherein the ceramic has a Young's Modulus greater than about 230 GPa.

21. (Original) The ESD safe ceramic component of claim 1, wherein the component has a Vickers Hardness greater than about 13 GPa.

22. (Original) The ESD safe ceramic component of claim 1, wherein the component has a thermal expansion coefficient less than about $10.0 \times 10^{-6} K^{-1}$.

23. (Original) The ESD safe ceramic component of claim 1, wherein the component has a density at least 98% of theoretical density.

24. (Original) The ESD safe ceramic component of claim 23, wherein the component has a density at least 99% of theoretical density.

25. (Original) The ESD safe ceramic component of claim 24, wherein the component has a density at least 99.5% of theoretical density.

26. (Original) The ESD safe ceramic component of claim 1, wherein the component has an average grain size less than about $1.0 \mu m$.

27. (Original) The ESD safe ceramic component of claim 1, wherein the component is selected from a group consisting of wire bonding tips, wire bonding capillaries, magneto-resistive handling tools, substrates, carriers, slicing tools, dicing tools, de-gluing carrier tools, pick and place tools, semiconductor device packaging tools, single and two step probes, and test sockets.

28. (Currently Amended) [[The]] An ESD safe ceramic component of claim 1, formed of a sintered composition comprising:

a base material of a zirconia toughened alumina, comprising a primary component of Al₂O₃ and a secondary component comprising ZrO₂, wherein the ZrO₂ comprises

tetragonal ZrO₂, wherein the primary component of the base material is present in an amount greater than the secondary component; and
a resistivity modifier to reduce an electrical resistivity of the base material, the resistivity modifier comprising a transition metal oxide in an amount within a range of about 5 to about 40 volume% with respect to the base material,
wherein the component has a volume resistivity within a range of about 10⁵ to about 10¹¹ ohm-cm.

29. (Currently Amended) The ESD safe ceramic component of claim [[1]] 28, wherein the component has a volume resistivity within a range of about 10⁶ to about 10⁹ ohm-cm.

30. (Original) The ESD safe ceramic component of claim 1, wherein the component has an L* greater than about 35.

31. (Original) The ESD safe ceramic component of claim 1, wherein the component has a coercive magnetic field Hc not greater than about 5 E4 A/m.

32. (Original) The ESD safe ceramic component of claim 1, wherein the component has a residual magnetic induction Mr of not greater than 10 Gauss.

33. (Currently Amended) An ESD safe ceramic bonding tool formed from a sintered composition comprising:

a base material of a zirconia toughened alumina, comprising a primary component of Al₂O₃ and a secondary component comprising ZrO₂, wherein the ZrO₂ comprises tetragonal ZrO₂, wherein the primary component of the base material is present in an amount greater than the secondary component; and
a resistivity modifier to reduce an electrical resistivity of the base material, the resistivity modifier comprising a transition metal oxide, wherein
the tool has a density not less than 98% of theoretical density, a volume resistivity within a range of about 10⁶ to about 10⁹ ohm-cm.

34. (Original) The tool of claim 33, bonding tool has a tip portion that is textured for gripping a workpiece.

35. (Original) The tool of claim 34, bonding tool further comprises an ultrasonic generator for vibrating the tip portion.

36. - 64. (Canceled)

65. (New) The ESD safe ceramic component of claim 28, wherein the resistivity modifier comprises a conductive particulate.

66. (New) The ESD safe ceramic component of claim 28, wherein the transition metal oxide is selected from the group consisting of Fe_2O_3 , TiO_2 , and MnO_2 .

67. (New) The ESD safe ceramic component of claim 66, wherein the transition metal oxide is Fe_2O_3 .

68. (New) The ESD safe ceramic component of claim 28, wherein the base material comprises Al_2O_3 and ZrO_2 in a ratio not less than 55:45 based on volume percent.

69. (New) The ESD safe ceramic component of claim 68, wherein said ratio is not less than 60:40.

70. (New) The ESD safe ceramic component of claim 28, wherein the primary component forms a primary phase of the base material, and the secondary component forms a secondary phase that is dispersed within the primary phase.

71. (New) The ESD safe ceramic component of claim 70, wherein the secondary component comprises mainly tetragonal ZrO_2 .

72. (New) The ESD safe ceramic component of claim 71, wherein the secondary component comprises at least 75 vol% tetragonal ZrO_2 .

73. (New) The ESD safe ceramic component of claim 72, wherein the secondary component comprises at least 85 vol% tetragonal ZrO₂.

74. (New) The ESD safe ceramic component of claim 71, wherein the secondary component further includes at least one of cubic and monoclinic ZrO₂.

75. (New) The ESD safe ceramic component of claim 28, wherein the ZrO₂ includes a stabilizer.

76. (New) The ESD safe ceramic component of claim 75, wherein the stabilizer comprises at least one material from the group consisting of yttria, ceria, scandia.

77. (New) The ESD safe ceramic component of claim 75, wherein the ZrO₂ is pre-alloyed with the stabilizer prior to sintering.

78. (New) The ESD safe ceramic component of claim 28, wherein the component has a volume resistivity within a range of about 10⁵ to about 10¹¹ ohm-cm.

79. (New) The ESD safe ceramic component of claim 28, wherein the component has a Vickers Hardness greater than about 13 GPa.

80. (New) The ESD safe ceramic component of claim 28, wherein the component has a thermal expansion coefficient less than about 10.0 x 10⁻⁶K⁻¹.

81. (New) The ESD safe ceramic component of claim 28, wherein the component has a density at least 98% of theoretical density.

82. (New) The ESD safe ceramic component of claim 81, wherein the component has a density at least 99% of theoretical density.

83. (New) The ESD safe ceramic component of claim 82, wherein the component has a density at least 99.5% of theoretical density.

84. (New) The ESD safe ceramic component of claim 28, wherein the component has an average grain size less than about 1.0 μm .

85. (New) The ESD safe ceramic component of claim 28, wherein the component is selected from a group consisting of wire bonding tips, wire bonding capillaries, magneto-resistive handling tools, substrates, carriers, slicing tools, dicing tools, de-gluing carrier tools, pick and place tools, semiconductor device packaging tools, single and two step probes, and test sockets.

86. (New) The ESD safe ceramic component of claim 28, wherein the component has an L^* greater than about 35.

87. (New) The ESD safe ceramic component of claim 28, wherein the component has a coercive magnetic field H_c not greater than about 5 E4 A/m.

88. (New) The ESD safe ceramic component of claim 28, wherein the component has a residual magnetic induction M_r of not greater than 10 Gauss.